Pflügers Archiv

European Journal of Physiology

Vol. 378 1978/79

Field Editors

P.-O. Åstrand, Stockholm · D. L. Brutsaert, Antwerpen
F. W. Campbell, Cambridge · V. Capraro, Milano
R. Casteels, Leuven · J. Crabbé, Bruxelles
C. de Rouffignac, Gif-sur-Yvette · J. Durand, Paris
E. Gerlach, München · S. Grillner, Stockholm
H. Hensel, Marburg · K. Hierholzer, Berlin
S. M. Hilton, Birmingham · W. D. Keidel, Erlangen
H. H. Loeschcke, Bochum · H. Meves, Plymouth
A. Nizet, Liège · B. Öberg, Uppsala
O. H. Petersen, Dundee · W. Precht, Frankfurt (Main)
E. Simon, Bad Nauheim · L. Tauc, Gif-sur-Yvette
G. Thews, Mainz · K. Thurau, München
W. Trautwein, Homburg (Saar)
K. J. Ullrich, Frankfurt (Main) · E. Wetterer, Erlangen
J. Zachar, Bratislava · W. G. Zijlstra, Groningen

Subject Editors

N. A. Lassen, København · P. Deetjen, Innsbruck
O. Pompeiano, Pisa

Coordinating Editor

F. Kreuzer, Nijmegen

Springer International

Pflügers Archiv · European Journal of Physiology

Founded in 1868 as „Pflügers Archiv für die gesamte Physiologie des Menschen und der Tiere" by *E. F. W. Pflüger*. Edited by *M. Verworn, E. Abderhalden, A. Bethe, R. Höber, A. v. Muralt, H. Rein* et al.

Published: Vol. 1—29 (1876) Bonn, Cohen und Sohn; Vol. 30—92 (1901) Bonn, E. Strauß; Vol. 93—170 (1917) Bonn, M. Hager; since Vol. 171 (1918) Berlin, Springer.

Since 1920 Pflügers Archiv has included: „Archiv für Physiologie" (Archiv für Anatomie und Physiologie, Physiologische Abteilung). Founded and edited by Johannes Müller, E. du Bois-Reymond, W. v. Waldeyer-Hartz et al. 1877—1914. Leipzig, Veit und Co., since 1915, Berlin, Vereinigung Wissenschaftlicher Verleger, afterwards Walter de Gruyter.

Alle Rechte, einschließlich das der Übersetzung in fremde Sprachen und das der fotomechanischen Wiedergabe oder einer sonstigen Vervielfältigung, auch in Mikroform, vorbehalten. Jedoch wird gewerblichen Unternehmen für den innerbetrieblichen Gebrauch nach Maßgabe des zwischen dem Börsenverein des Deutschen Buchhandels e.V. und dem Bundesverband der Deutschen Industrie abgeschlossenen Rahmenabkommens die Anfertigung einer fotomechanischen Vervielfältigung gestattet. Wenn für diese Zeitschrift kein Pauschalabkommen mit dem Verlag vereinbart worden ist, ist eine Wertmarke im Betrage von DM 0,40 pro Seite zu verwenden. *Der Verlag läßt diese Beträge den Autorenverbänden zufließen.*

Die Wiedergabe von Gebrauchsnamen, Handelsnamen, Warenbezeichnungen usw. in dieser Zeitschrift berechtigt auch ohne besondere Kennzeichnung nicht zu der Annahme, daß solche Namen im Sinne der Warenzeichen- und Markenschutz-Gesetzgebung als frei zu betrachten wären und daher von jedermann benutzt werden dürften.

The exclusive copyright for all languages and countries, including the right for photomechanical and any other reproductions, also in microform, is transferred to the publisher.

The use of registered names, trademarks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

Springer-Verlag Berlin Heidelberg New York

Printers: Wiesbadener Graphische Betriebe GmbH, Wiesbaden

Printed in Germany — © by Springer-Verlag Berlin Heidelberg 1978/79

Contents

Azuma, T., s. Sakaguchi, M., et al. 263

Bennett, J. W., s. Hales, J. R. S., et al. 55

Berdina, N. A., Kots, J. M., Rodionov, I. M., Tkhorevsky, V. I., Vinogradova, O. L., Vishnevetskaya, M. A.
Cholinergic and Adrenergic Influences Upon Cat Skeletal Muscle Performance Induced by Stimulation of the Anterior Hypothalamus **149**

Binkhorst, R. A., s. Hulsbosch, M. A. M., et al. 85

Birkenfeld, G., s. Schad, H., et al. 121

Brechtelsbauer, H., s. Schad, H. 127

Brechtelsbauer, H., s. Schad, H., et al. 121

Bursaux, E., Poyart, C., Guesnon, P., Teisseire, B.
Comparative Effects of CO_2 on the Affinity for O_2 of Fetal and Adult Erythrocytes 197

Cooper, K. E., s. Vaughn, L. K., et al. 185

Curci, S., s. Edelman, A., et al. 37

Edelman, A., Curci, S., Samaržija, I., Frömter, E.
Determination of Intracellular K^+ Activity in Rat Kidney Proximal Tubular Cells 37

Edvinsson, L., s. MacKenzie, E. T., et al. 189

Epstein, F. H., s. Eveloff, J., et al. 87

Eveloff, J., Kinne, R., Kinne-Saffran, E., Murer, H., Silva, P., Epstein, F. H., Stoff, J., Kinter, W. B.
Coupled Sodium and Chloride Transport into Plasma Membrane Vesicles Prepared from Dogfish Rectal Gland 87

Fawcett, A. A., s. Hales, J. R. S., et al. 55

Fitch, W., s. MacKenzie, E. T., et al. 189

Flowaczny, H., s. Schad, H., et al. 121

Folgering, H. Th., s. Hulsbosch, M. A. M., et al. 85

Frömter, E., s. Edelman, A., et al. 37

Frömter, E., s. Suzuki, K., et al. 141

Fromm, M., Hegel, U.
Segmental Heterogeneity of Epithelial Transport in Rat Large Intestine 71

Gay, L. A., Stanfield, P. R.:
The Selectivity of the Delayed Potassium Conductance of Frog Skeletal Muscle Fibres 177

Gerlach, E., s. Schrader, J., et al. 167

Graham, D. I., s. MacKenzie, E. T., et al. 189

Guesnon, P., s. Bursaux, E., et al. 197

Hales, J. R. S., Fawcett, A. A., Bennett, J. W., Needham, A. D.
Thermal Control of Blood Flow Through Capillaries and Arteriovenous Anastomoses in Skin of Sheep 55

Hammel, H. T., s. Simon-Oppermann, Ch., et al. 213

Harder, D. R., Sperelakis, N.
Membrane Electrical Properties of Vascular Smooth Muscle from the Guinea Pig Superior Mesenteric Artery 111

Hashimoto, K., s. Ochi, R. 1

Hegel, U., s. Fromm, M. 71

Hellman, B., Sehlin, J., Täljedal, I.-B.
Effects of Na^+, K^+ and Mg^{2+} on $^{45}Ca^{2+}$ Uptake by Pancreatic Islets 93

Horster, M.
Loop of Henle Functional Differentiation in vitro Perfusion of the Isolated Thick Ascending Segment 15

Hulsbosch, M. A. M., Binkhorst, R. A., Folgering, H. Th.
Three Successive Steady-State CO_2-Response Curves. No Change of Sensitivity of the Ventilatory Controlling System for CO_2 85

Kille, J. F., s. Schlaefke, M. E., et al. 231

Kinne, R., s. Eveloff, J., et al. 87

Kinne-Saffran, E., s. Eveloff, J., et al. 87

Kinter, W. B., s. Eveloff, J., et al. 87

Klempt, P., Peiper, U.
The Dynamics of Cross-Bridge Movement in Vascular Smooth Muscle Estimated from a Single Isometric Contraction of the Portal Vein: The Influence of Temperature and Calcium 31

Klempt, P., s. Peiper, U., et al. 25

Kots, J. M., s. Berdina, N. A., et al. 149

Kuba, K., Nishi, S.
Characteristics of Fast Excitatory Postsynaptic Current in Bullfrog Sympathetic Ganglion Cells 205

Lafortuna, C. L., s. Saibene, F., et al. 65

Leniger-Follert, E., s. Urbanics, R., et al. 47

Lieberman, E. M.
Effect of External Potassium on the Coupled Sodium: Potassium Transport Ratio of Axons 243

Lin, M. T.
Effects of Sodium Acetylsalicylate on Thermoregulatory Responses of Rats to Different Ambient Temperatures 181

Loeschcke, H. H., s. Schlaefke, M. E., et al. 231

Lübbers, D. W., s. Urbanics, R., et al. 47

Lyngdorf-Henriksen, P., Munck, B. G., Skadhauge, E.
Sodium Chloride Transport Across the Lower Intestine of the Chicken. Dependence on Sodium Chloride Concentration and Effect of Inhibitors 161

MacKenzie, E. T., McGeorge, A. P., Graham, D. I., Fitch, W., Edvinsson, L., Murray Harper, A.
Effects of Increasing Arterial Pressure on Cerebral Blood Flow in the Baboon: Influence of the Sympathetic Nervous System 189

McGeorge, A. P., s. MacKenzie, E. T., et al. 189

Mognoni, P., s. Saibene, F., et al. 65

Mostardi, R., s. Saibene, F., et al. 65

Munck, B. G., s. Lyngdorf-Henriksen, P., et al. 161

Murer, H., s. Eveloff, J., et al. 87

Murray Harper, A., s. MacKenzie, E. T., et al. 189

Naylor, G. R. S.
A Simple Circuit for Automatic Continuous Recording of Microelectrode Resistance 107

Needham, A. D., s. Hales, J. R. S., et al. 55

Nees, S., s. Schrader, J., et al. 167

Nishi, S., s. Kuba, K. 205

Nizet, A.
Inhibition by Indomethacin of the Renal Response to an Acute Saline Load in the Dog 223

Obara, S.
A Low-Cost, High-Precision Scope Calibrator. A Delayed Pulse Generator with an Isolated Output 259

Ochi, R., Hashimoto, K.
The Effect of Procaine on the Passive Electrical Properties of Guinea-Pig Ventricular Muscle 1

Ohhashi, T., s. Sakaguchi, M., et al. 263

Peiper, U., Klempt, P., Schleupner, R.
The Temperature Dependence of Parallel and Series Elastic Elements in the Vascular Smooth Muscle of the Rat Portal Vein 25

Peiper, U., s. Klempt, P. 31

Pette, D., Vrbová, G., Whalen, R. C.
Independent Development of Contractile Properties and Myosin Light Chains in Embryonic Chick Fast and Slow Muscle 251

Poyart, C., s. Bursaux, E., et al. 197

Rantamäki, J., s. Vihko, V., et al. 99

Richardson, P. D. I., Withrington, P. G.
The Effects of Intraportal Infusions of Glucagon on the Hepatic Arterial and Portal Venous Vascular Beds of the Dog: Inhibition of Hepatic Arterial Vasoconstrictor Responses to Noradrenaline 135

Rodionov, I. M., s. Berdina, N. A., et al. 149

Rohlíček, V., s. Suzuki, K., et al. 141

Saibene, F., Mognoni, P., Lafortuna, C. L., Mostardi, R.
Oronasal Breathing During Exercise 65

Sakaguchi, M., Ohhashi, T., Azuma, T.
A Photoelectric Diameter Gauge Utilizing the Image Sensor 263

Salminen, A., s. Vihko, V., et al. 99

Samaržija, I., s. Edelmann, A., et al. 37

Schad, H., Brechtelsbauer, H.
The Effect of Saline Loading and Subsequent Anaesthesia on Thoracic Duct Lymph, Transcapillary Protein Escape and Plasma Protein of Conscious Dogs 127

Schad, H., Flowaczny, H., Brechtelsbauer, H., Birkenfeld, G.
The Significance of Respiration for Thoracic Duct Flow in Relation to Other Driving Forces of Lymph Flow 121

Schlaefke, M. E., Kille, J. F., Loeschcke, H. H.
Elimination of Central Chemosensitivity by Coagulation of a Bilateral Area on the Ventral Medullary Surface in Awake Cats 231

Schleupner, R., s. Peiper, U., et al. 25

Schmidt, I., Simon, E.
Temperature Changes of the Hypothalamus and Body Core in Ducks Feeding in Cold Water 227

Schrader, J., Nees, S., Gerlach, E.
Radioimmunoassay for Adenosine in Biological Samples 167

Sehlin, J., s. Hellman, B., et al. 93

Silva, P., s. Eveloff, J., et al. 87

Simon, E., s. Schmidt, I. 227

Simon, E., s. Simon-Oppermann, Ch., et al. 213

Simon-Oppermann, Ch., Hammel, H. T., Simon, E.
Hypothalamic Temperature and Osmoregulation in the Pekin Duck 213

Skadhauge, E., s. Lyngdorf-Henriksen, P., et al. 161

Sperelakis, N., s. Harder, D. R. 111

Standen, N. B., Stanfield, P. R.
Inward Rectification in Skeletal Muscles: A Blocking Particle Model 173

Stanfield, P. R., s. Gay, L. A. 177

Stanfield, P. R., s. Standen, N. B. 173

Steinhausen, M., Tillmanns, H., Thederan, H.
Microcirculation of the Empimyocardial Layer of the Heart. I. A Method for in vivo Observation of the Microcirculation of Superficial Ventricular Myocardium of the Heart and Capillary Flow Pattern under Normal and Hypoxic Conditions 9

Stoff, J., s. Eveloff, J., et al. 87

Suzuki, K., Rohlíček, V., Frömter, E.
A Quasi-Totally Shielded, Low-Capacitance Glass-Microelectrode with Suitable Amplifiers for High-Frequency Intracellular Potential and Impedance Measurements 141

Täljedal, I.-B., s. Hellman, B., et al. 93

Teisseire, B., s. Bursaux, E., et al. 197

Thederan, H., s. Steinhausen, M., et al. 9

Tillmanns, H., s. Steinhausen, M., et al. 9

Tkhorevsky, V. I., s. Berdina, N. A., et al. 149

Urbanics, R., Leniger-Follert, E., Lübbers, D. W.
Time Course of Changes of Extracellular H^+ and K^+ Activities During and After Direct Electrical Stimulation of the Brain Cortex 47

Vaughn, L. K., Veale, W. L., Cooper, K. E.
Impaired Thermoregulation in Pregnant Rabbits at Term 185

Veale, W. L., s. Vaughn, L. K., et al. 185

Vihko, V., Salminen, A., Rantamäki, J.
Acid Hydrolase Activity in Red and White Skeletal Muscle of Mice During a Two-Week Period Following Exhausting Exercise 99

Vinogradova, O. L., s. Berdina, N. A., et al. 149

Vishnevetskaya, M. A., s. Berdina, N. A., et al. 149

Vrbová, G., s. Pette, D., et al. 251

Warner, R. R.
Compartmental Analysis of Na Efflux Across Ileum Mucosal Membrane 155

Whalen, R. C., s. Pette, D., et al. 251

Withrington, P. G., s. Richardson, P. D. I. 135

Indexed in Current Contents

Subject Index

A

Acetazolamide 71–83
Acetylcholine 149–154
Acid hydrolase activity 99–106
Acidosis 47–53
–, respiratory 85–86
Active K^+ transport 37–45
ADH-Kidney 213–221
Adenosine, radioimmunoassay 167–171
Adrenalectomy 71–83
Adrenaline 149–154
Aldosterone 71–83
Amiloride 71–83, 161–165
– -sensitive Na^+-pathway 71–83
Anaesthesia 71–83, 127–133
Anterior hypothalamus, stimulation 149–154
Antidiuretic hormone 213–221
Angiotensin 189–195
Area S 231–241
Arterial pressure 189–195
– vascular smooth muscle 111–119
Arteriovenous anastomoses 55–63
Arylsulphatase 99–106
Atropine 149–154
Automatic continuous recording 107–110
Autonomic influence on muscle 149–154
Avian osmoregulation 213–221
Awake cats 231–241
Axon 243–249

B

Barium effect 111–119
Basal-lateral plasma membranes 87–92
β-glucuronidase 99–106
β-N-acetylglucosaminidase 99–106
Bird osmoregulation 161–165
Blood-brain barrier 189–195
– flow, cerebral 189–195
– pressure, effect on cerebral blood flow 189–195
– vessel diameter 263–268
Brain cortex 47–53
Breathing pattern 65–69

C

Ca^{2+} 205–212
Calcium 31–36
– uptake, pancreatic islets 93–97
Capillary filtration 127–133
– protein escape 127–133
– reserve 9–14
Carbamates, linked 197–203
Cardiac microcirculation 9–14
Catecholamines 135–140
Cathepsin D activity 99–106
Cell injury 99–106
Central chemosensitivity 231–241
– nervous system, chemosensitivity 231–241
Cerebral blood flow 189–195
Cervical sympathetic chain 189–195
Chloride transport 87–92
Cholinergic vasodilatation 149–154
Coaxial glass capillary electrode 141–148
Cold diuresis 213–221
– stress 55–63
Colon, heterogeneity of transport 71–83
Compartmental analysis of Na efflux 155–160
Contractile properties 251–257
Contractility 31–36
Core temperature 227–230
Coronary flow 9–14
CO_2, respiratory response 231–241
CO_2 response 231–241
CO_2 transport 197–203
Cortical collecting duct 71–83
– thick ascending limb (CTAL) 15–24
Cotransport system sensitive to furosemide 87–92
Coupled Na: K transport 243–249
– sodium and chloride transport 87–92
Counter current system, renal 15–24
Cross-bridge movement 31–36
Cytoplasmic K^+ activity 37–45

D

Delayed pulse generator 259–262
D-glycerate-2,3-P 197–203
Direct electrical stimulation of the brain cortex 47–53
Diuretic effects of hypothalamic cooling 213–221
Duct lymph 127–133

E

Efflux pools 155–160
Elasticity, vascular smooth muscle 25–30
Electrogenic pump potential 111–119
Electrolyte transport, rectal gland 87–92
– –, renal 15–24
Electrolytes, uptake by pancreatic islets 93–97
Electronic potentials 1–7
Electro-neutral Na: Na or K: K exchange 243–249
Enzymology, muscle 99–106
Epithelial transport 15–24, 71–83, 155–160
Error-free phaseshift measurements 141–148
Erythrocytes 197–203
Excitatory postsynaptic current 205–212
Exercise, 65–69, 99–106
Exhausting exercise 99–106
Extracellular H^+ and K^+ activities 47–53

F

Fast excitatory postsynaptic current 205–212
Fetal and adult erythrocytes 197–203
Fluorescent dyes 9–14
Forces driving lymph flow 121–125
Force-velocity relation 31–36
Furosemide 87–92

G

Gel electrophoresis, two dimensional 251–257
Giant axons 243–249
Glucagon 135–140
Goldman constant-field equation 111–119

H

H^+ activity 47–53
Halothane 127–133
HbA_1 197–203
HbF_{11} 197–203
Heat stress 55–63
Heart, microcirculation 9–14
Hemoglobin, HbF_{11} and HbA_1 197–203
Hepatic arterial vasoconstrictor response 135–140
Heterogeneity 71–83
High-frequency microelectrode recording 141–148
– -precision scope calibrator 259–262
H^+-sensitive glass microelectrodes 47–53
Hydroxylase activity, acid 99–106
Hyperemia, brain cortex 47–53
Hyperoxic condition 231–241
Hyperpolarizing current pulses 1–7
Hypertension 189–195
Hyperventilation 65–69
Hypothalamic temperature 213–221, 227–230
Hypothalamus, local warming 55–63

I

Ileum mucosal membrane 155–160
Image sensor 263–268
Indomethacin 223–225
Inhalation of CO_2 231–241
Injury, cell 99–106
Insulin release 93–97
Intercalated disks 1–7
Intestinal perfusion parameters 71–83
Intestine 161–165
Intracellular impedance measurements 141–148
– K^+ activity 37–45
– microelectrodes 111–119
– recording 107–110
Intraportal infusions of glucagon 135–140
Intravital microscopy 9–14
In vitro perfusion, loop of Henle 15–24
Ion-selective microelectrode 37–45
– -sensitive microelectrodes 47–53

Ischaemic brain damage 189–195
Islets of Langerhans 93–97
Isolated segments of rat colon and rectum 71–83
– thick ascending segment of loop of Henle 15–24
Isometric contraction 31–36

K

K^+ activity 37–45, 47–53
Kidney, counter current system 15–24
– distal cortical tubule 71–83
–, loop of Henle function 15–24
– proximal tubular cells 37–45
–, transplanted 223–225
K^+permeability 111–119

L

Lanthanum-nondisplaceable $^{45}Ca^{2+}$ uptake 93–97
Large intestine, epithelial transport 71–83
Legs, local warming 55–63
Length-tension relation 25–30
Linked carbamates 197–203
Liquid K^+-exchanger resin 37–45
Liver circulation 135–140
Loop of Henle, functional differentiation 15–24
Lower intestine 161–165
Luminal distension 71–83
Lymph flow 121–125
– protein composition 121–125

M

Magnesium uptake, pancreatic islets 93–97
Malate dehydrogenase 99–106
Membrane electrical properties of vascular smooth muscle 111–119
– potential 205–212
– potentials 111–119
– resistance 1–7
Microcirculation of the epimyocardial layer 9–14
Microdissected pancreatic islets 93–97
Microelectrode recording 259–262
– resistance 107–110
– techniques 141–148
Microflow regulation 47–53
Microspheres 55–63
Mucosal membrane 155–160
Muscle differentiation 251–257
– enzymology 99–106
– performance 149–154
– relaxation 127–133
–, smooth, electrical properties 111–119
Myosin light chains 251–257

N

NaCl transport 161–165
Na efflux 155–160
Na^+ permeability 111–119
Nasal resistance 65–69
Na^+ transport 15–24
Negative capacitance amplifiers 141–148
Nephron differentiation 15–24
Noradrenaline 135–140, 263–268
Normoxia 85–86
Nucleus paragigantocellularis 231–241

O

Optical fiber 263–268
Oronasal breathing 65–69
Osmoregulation 161–165, 213–221
Osmotic diuresis 213–221
– hydraulic permeability 15–24
Ouabain 161–165, 243–249
– sensitive transport current 243–249
Oxygen 197–203

P

Papillary muscle 1–7
Parallel elastic elements, vascular smooth muscle 25–30
Parieto-occipital region 189–195
Periodic breathing 231–241
Photoelectric transducer 263–268
Pickwickian or Ondine's curse syndrome 231–241
Placental O_2 transfer 197–203
Plasma membrane vesicles 87–92
Pneumothorax, upon thoracic duct flow 121–125
p-nitrophenylphosphatase 99–106
Portal vein 25–30, 135–140
– –, isometric contraction 31–36
Post-stress recovery, muscle 99–106
Potassium activity, intracellular, renal 37–45
– conductance 111–119
– transport ratio of axons 243–249
– uptake, pancreatic islets 93–97
Procaine 1–7
Propanolol 149–154
Prostaglandins 223–225
Protein escape 127–133
Proximal tubular cells 37–45

R

Radioimmunoassay for adenosine 167–171
Rectal gland 87–92
Rectum, transport 71–83
Red/white skeletal muscle 99–106
Renal sodium transport 223–225
– tubular cell 37–45
Respiratory acidosis 85–86
– load, tolerance of 65–69
– movement and lymph flow 121–125
„– pump", lymph 121–125
Rest 85–86
Resting membrane potential axon 243–249
Ribonuclease 99–106

S

Saline loading 127–133
Sält gland 213–221
Series elastic element 25–30
– elasticity 25–30
Scope calibrator, high precision 259–262
Single-dimensional cable model 1–7
Skeletal muscle 99–106
– – performance 149–154
Skin blood flow 55–63
Smooth muscle 25–30
– – vascular 31–36
Sodium chloride cotransport 87–92
– – transport 161–165
– excretion 223–225
– transport 87–92
– uptake, pancreatic islets 93–97
Space constant 1–7
Speed of contraction 251–257
Spinal cord, local warming 55–63
– – temperature 227–230
Staircase phenomenon 31–36
Sympathetic ganglion cell 205–212
– nervous system 189–195

T

Temperature 31–36
– changes, hypothalamus 227–230
– dependence of elasticity 25–30
Tetanic contraction 149–154
Tetanus/twitch ratios 251–257
Tetraethylammonium effect 111–119
Thermal control of blood flow 55–63
Thermoregulation 55–63
Thoracic duct flow 121–125
– – lymph 127–133
Time constant 1–7
Tip potential 107–110
Tolerance of respiratory loads 65–69
Transcapillary protein escape 127–133
Transepithelial electrical potential difference 71–83
– NaCl and water movement 15–24
Transplanted kidneys 223–225
Tubular solute and water absorption 37–45

U

Urine osmolality 213–221

V

Valinomycin 87–92
Vascular resistance 135–140
– smooth muscle 25–30, 31–36, 111–119
Vasoconstrictor response, hepatic artery 135–140
Ventilatory CO_2-response 85–86
– controlling system for Co_2 85–86
Ventral medullary surface 231–241
Ventricular muscle, passive electrical properties 1–7
Vicinal hydroxyl groups 167–171

X

^{133}Xenon injection technique 189–195

Diabetologia

Organ of the European Association for the Study of Diabetes (EASD)

Volume 15 Number 6 December 1978

Editorial

The Policy of the European Association for the Study of Diabetes on Human Investigation **431**

Originals

D. S. Schade, R. P. Eaton
The Metabolic Response to Norepinephrine in Normal Versus Diabetic Man **433**

N. G. Soler, J. M. Malins
Diabetic Pregnancy: Management of Diabetes on the Day of Delivery **441**

N. Bengsch, J. Köbberling, G. Eckert, B. Willms
HLA-Typing in Juvenile Diabetics with and without Positive Family History and in Families with One and Two Diabetic Siblings **447**

J. D. Mackay, H. Hayakawa, P. J. Watkins
Cardiovascular Effects of Insulin: Plasma Volume Changes in Diabetics **453**

J. P. Pegorier, P. Ferré, A. Leturque, J. Girard
The Metabolic Effects of Sodium Dichloroacetate in the Suckling Newborn Rat **459**

M. Ashwell, C. J. Meade
Obesity: Do Fat Cells from Genetically Obese Mice (C57BL/6J ob/ob) Have an Innate Capacity for Increased Fat Storage? **465**

T. Matsuyama, R. Tanaka, K. Shima, K. Nonaka, S. Tarui
Lack of Gastrointestinal Glucagon Response to Hypoglycaemia in Depancreatized Dogs **471**

K. Hermansen, J. Iversen
Dual Action of Mn^{++} upon the Secretion of Insulin and Glucagon from the Isolated, Perfused Canine Pancreas. Possible Interactions with Ca^{++} **475**

Y. Z. Diamant, E. Shafrir
Placental Enzymes of Glycolysis, Gluconeogenesis and Lipogenesis in the Diabetic Rat and in Starvation. Comparison with Maternal and Foetal Liver **481**

Short Communications

R. Østerby, K. Seyer-Hansen, H. J. G. Gundersen, K. Lundbaek
Growth Hormone Enhances Basement Membrane Thickening in Experimental Diabetes. A Preliminary Report **487**

Book Reviews **490**

Organization Section **491**

Author-Index **493**

Subject-Index **498**

Indexed in Current Contents

Subscription Information
Volumes 16 and 17 (6 issues each) will appear in 1979. Information about obtaining back volumes and microform editions is available upon request.
North America: Subscription rate: $ 147.80, including postage and handling. Subscriptions are entered with prepayment only. Orders should be addressed to: Springer-Verlag New York Inc., Service Center Secaucus, 44 Hartz Way, Secaucus, NJ 07094, Telephone (201) 348-4033, Telex 125994.
All Other Countries: Subscription rate: DM 268.– plus postage and handling. Orders can either be placed with your bookdealer or sent directly to: Springer-Verlag, Heidelberger Platz 3, D-1000 Berlin 33.

Springer International

Diabetologia – ISSN 0012-186X DBTGAJ 15(6) 431–504 (1978)

Pflügers Archiv

European Journal of Physiology

Contents of Volume 378 No. 3 January 1979

Heart, circulation, respiration and blood; environmental and exercise physiology (A)

E. T. MacKenzie, A. P. McGeorge, D. I. Graham, W. Fitch, L. Edvinsson, A. Murray Harper: Effects of Increasing Arterial Pressure on Cerebral Blood Flow in the Baboon: Influence of the Sympathetic Nervous System **189**

E. Bursaux, C. Poyart, P. Guesnon, B. Teisseire: Comparative Effects of CO_2 on the Affinity for O_2 of Fetal and Adult Erythrocytes **197**

Ch. Simon-Oppermann, H. T. Hammel, E. Simon: Hypothalamic Temperature and Osmoregulation in the Pekin Duck **213**

I. Schmidt, E. Simon: Temperature Changes of the Hypothalamus and Body Core in Ducks Feeding in Cold Water **227**

M. E. Schlaefke, J. F. Kille, H. H. Loeschcke: Elimination of Central Chemosensitivity by Coagulation of a Bilateral Area on the Ventral Medullary Surface in Awake Cats **231**

Instruments and Techniques

M. Sakaguchi, T. Ohhashi, T. Azuma: A Photoelectric Diameter Gauge Utilizing the Image Sensor **263**

Transport processes, metabolism and endocrinology; kidney, gastrointestinal tract, and exocrine glands (B)

A. Nizet: Inhibition by Indomethacin of the Renal Response to an Acute Saline Load in the Dog **223**

Excitable tissues and central nervous physiology (C)

K. Kuba, S. Nishi: Characteristics of Fast Excitatory Postsynaptic Current in Bullfrog Sympathetic Ganglion Cells **205**

E. M. Lieberman: Effect of External Potassium on the Coupled Sodium: Potassium Transport Ratio of Axons **243**

D. Pette, G. Vrbová, R. C. Whalen: Independent Development of Contractile Properties and Myosin Light Chains in Embryonic Chick Fast and Slow Muscle **251**

Instruments and Techniques

S. Obara: A Low-Cost, High-Precision Scope Calibrator. A Delayed Pulse Generator with an Isolated Output **259**

Indexed in Current Contents

Springer International